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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/779,944	02/08/2001	Mike Binnard	PA0325-US / 11269.22	4142

7590 07/25/2003

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EXAMINER

KIM, PETER B

ART UNIT

PAPER NUMBER

2851

DATE MAILED: 07/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/779,944	Applicant(s) BINNARD ET AL.	
	Examiner Peter B. Kim	Art Unit 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27,33-40 and 42-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 47-50 is/are allowed.
- 6) ☒ Claim(s) 1-27,32-46 and 51-56 is/are rejected.
- 7) ☒ Claim(s) 12-15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>6/2003</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's arguments filed on Jun. 26, 2003 have been fully considered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11, 16-27, 32-40, 42-46, and 51-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korenaga et al. (Korenaga) (6,570,645) in view of Yonekawa et al. (Yonekawa) (6,330,052).

Korenaga discloses in Fig. 8-10, a method for making a device stage assembly and a device stage assembly that moves a device relative to a mounting base or a stage base (502), the assembly comprising a device stage (501) being movable relative to the surface of the mounting base, a mover housing (561) that is movable relative to the surface of the mounting base, a support assembly that moves the device relative to the mover housing along a z axis (581, 505Z), and control system for moving the stage along a Z axis, about a X axis and about a Y axis and suppressing deformation of the stage (col. 24, lines 36-45). Korenaga also discloses X device stage mover (505X) and Y device stage mover (505Y).

Regarding Claim 53, Korenaga discloses a stage base (563), a stage (561), a mounting base (502) and a support assembly (505Z). Regarding Claim 55, Korenaga discloses an apparatus frame (561), a stage (501), a mounting base (502) and a support assembly (505Z).

However, Korenaga does not disclose a control system that controls the Z device stage movers to inhibit deformation of the device stage during movement of the device stage by Z device stage movers. Yonekawa discloses in col. 8, lines 19-24 and col. 11, lines 20-46, a sensor for monitoring bending of the stage and moving the stage to make such dynamic factors to zero (col. 3, lines 35-49). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the sensor for bending and to make corrections based on the output of the sensor to inhibit deformation of the stage as taught by Yonekawa to the invention of Korenaga in order to prevent errors in precision in exposure as taught by Yonekawa in col. 1, line 20 – col. 3, line 33.

Claims 18-20, and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tokuda et al. (Tokuda) (6,493,062) in view of Yonekawa et al. (Yonekawa).

Tokuda discloses a device stage and a method of making a device stage assembly that moves a device (6) relative to a mounting base (1), the device stage assembly comprising a device stage that retains the device (33), a mover housing (2), a support assembly that moves the device stage relative to the mover housing, the support assembly including at least four, spaced apart Z device stage movers (38) that are connected to the device stage and a control system (30) that controls the X device stage movers to inhibit vibration which causes deformation of the device stage using a feedforward control by monitoring the movement of the stage (col. 13, lines 16-34). Tokuda's invention also inhibit dynamic deformation caused by repulsive force due to step and scan exposure, and the static deformation caused every time wafer and reticle stages move (col. 1, lines 27-36). Tokuda also discloses an exposure apparatus with an irradiation apparatus (Fig. 1 and 2) including the device stage assembly. Tokuda further discloses the

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device or a wafer manufactured with the exposure apparatus (Fig. 5 and 6). Tokuda also discloses the method of determining a driving force that inhibits deformation and providing the driving force to the stage to cause the movement of the stage (col. 13, lines 16-56). However, Tokuda does not disclose a control system that controls the Z device stage movers to inhibit deformation of the device stage during movement of the device stage by Z device stage movers. Yonekawa discloses in col. 8, lines 19-24 and col. 11, lines 20-46, a sensor for monitoring bending of the stage and moving the stage to make such dynamic factors to zero (col. 3, lines 35-49). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the sensor for bending and to make corrections based on the output of the sensor to inhibit deformation of the stage as taught by Yonekawa to the invention of Tokuda in order to prevent errors in precision in exposure as taught by Yonekawa in col. 1, line 20 – col. 3, line 33.

Allowable Subject Matter

Claims 47-50 are allowed.

Claims 12-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

None of the prior art of record teaches or discloses an exposure apparatus with the device stage assembly comprising a stage base that supports the mover housing and a base support assembly that moves the stage base relative the mounting base, and a base support assembly including four Z base movers or an apparatus frame that supports a portion of the device stage

assembly above the mounting base and a frame support assembly including four spaced apart Z frame movers.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

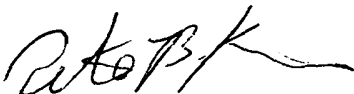
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Kim whose telephone number is (703) 305-0105. The examiner can normally be reached on Monday-Thursday from 8:30 AM to 6:00 PM. The examiner can also be reached on alternate Fridays during the same hours.

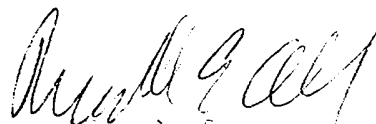
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703 308 2847. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9318 for regular communications and 703 872 9319 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 306 3431.



Peter B. Kim
Patent Examiner
July 22, 2003



Michael G. Allen
SUPERVISOR, PATENT EXAMINER
JULY 22, 2003